

REMARKS

In view of the indication of allowability of claim 17, at paragraph 10 of the 03/11/2005 Office Action, claim 17 has been cancelled and rewritten into independent form as new claim 23. Claim 18 has been changed to depend from new claim 23.

Before turning in detail to the rejections, it should be helpful to recognize that the claims are directed to a camera head. As described in the application at 0002, a camera head is an apparatus that allows the camera to be moved or aimed by pivoting or rotating about two or three axes. The camera head itself allows for this movement, without the need for additional accessories or pivot connections on the crane arm holding the camera head. Some camera heads can provide continuous 360° plus movement, as may be needed for specialized filming sequences. Motors are provided to allow the head to be controlled from a remote location. Typically, a remote camera head is mounted on a camera crane, a camera dolly, or other mobile platform. Fig. 1 of the application shows one embodiment of the present camera head 50 mounted on a crane arm 40 supported on a camera dolly 30.

Fig. 2 of Chapman, U.S. Patent No. 6,517,207 shows a camera crane arm 44 mounted on a camera dolly 20. Chapman '207 describes a "camera frame" 271 in Fig. 2 (or 280 in Fig. 8). The frame 271 is supported on a track section at the front end of the crane arm 44. The frame 271 has some similarities to a camera head, but it is not a camera head, as claimed. Even if the drive motor shown in Figs. 35 and 36 of Chapman '207 are used on both axes of the frame 271 in Fig. 2 of Chapman '207 (i.e., the pan and tilt axes), the range and types of movement provided by the claimed camera head (ref. Figs. 2-4 of the application) cannot be achieved. In addition, there

could be no roll axis (or dutch) movement. Figs. 15-19 of Chapman '207 show a roll movement accessory, which is not a camera head, for the reasons described above. Even if this accessory were motorized as well (to add roll movement), the versatility (as well as several of the claimed elements) would not be realized. The point here is that the camera crane or crane arm in Chapman '207 (as it has been applied against the claims), is not a camera head. The claimed camera head and the Chapman '207 crane arm are structurally and functionally entirely different.

Completely apart from the differences between the claimed camera head and the Chapman '207 camera crane, primary points of novelty include the adjustment features and waterproof operation of the claimed head (see 0009-0011). Various 3-axis remote camera heads have long been used in the motion picture industry. Examples of such camera heads are shown at pages 105-109 of the enclosed catalog pages (which are also listed in the attached Information Disclosure Statement). The remote camera system shown at page 109 of the enclosed catalog pages embodies several of the features described in the claims. The claims are directed to certain improvements in remote camera heads.

Turning to the rejection of claim 12 at paragraph 3 of the 03/11/2005 Office Action, the claim 12 table below shows the characterization of the Chapman '207 patent at paragraph 3 of the Office Action, with the actual disclosure of the Chapman '207 patent, for each element of claim 12.

Claim 12

Claim 12 Element	Office Action Applying Chapman USP 6,517,207	Actual Disclosure in Chapman USP 6,517,207	Column	Line
Camera head	Fig. 1, ref. 40	40 entire crane	5	46
A first frame	Figs. 2, refs. 44 [80/84/88], 46, and 60	44 boom arm	5	30
A first arm	Fig. 2, refs. 44 [80/84/88]	44 boom arm 80 rear segment 84 second front segment 88 wall sections 46 center pivot joint 60 track section	5 6 6 6 6 5	30 2 6 29 36 59
A first motor for rotating the first arm relative to the first frame	Figs. 22-24, 804	804 motor	17	14
With the first motor enclosed within a sealed housing	Figs. 4B and 46	46 center pivot joint	6	36
A second frame attached to the first arm	Fig. 4B, 42/124/140	42 post assembly 124 head frame 140 pan pivot joint	5 6 6	40 67 65
A second arm rotatably attached to the second frame	Figs. 4B and 42	42 post assembly	5	42
A second motor for rotating the second arm relative to the second frame, with the second motor enclosed in a sealed second housing.	Figs. 22-24	804 motor	17	14

This table shows that various elements of claim 12 are missing from the Chapman '207 patent. The claimed "first frame" is not a boom arm. The claimed "first arm" similarly is not a boom arm. While Chapman '207 discloses a motor 804-806 in Fig. 22, that motor is not "for rotating the first arm relative to the first frame" as claimed. There is also no mention of any sealing or sealed housing in Chapman '207. There is also nothing in Chapman '207 on which to draw an inference that the motor in Chapman '207 could be placed in a sealed housing, since there is no motivation therein to do so. Specifically, there is no mention in Chapman '207 of operation in wet conditions, or submerged underwater, since Chapman '207 addresses other problems.

The head frame 124 shown in Fig. 4B of Chapman '207 is simply a tubular or channel shaped structure which as shown in Fig. 2, is positioned between the arm 26 of the camera dolly 20, and the post-assembly 42 of the crane 40. And, in any event, even if the boom arm 44 could be considered a first arm, as claimed, and even if the head frame 124 could be considered to be a second frame, the head frame 124 is not attached to the boom arm 44, as claimed.

With respect to the first and second motors, Applicant does not here contest the Examiner's reasoning at the bottom half of page 3 of the 03/11/2005 Office Action. Rather, as described in the application at 0010, separate points of novelty include the frame/arm design, which allows for versatile adjustment, sizing, and/or balancing, and the sealed housings, which allow for use in wet or submerged conditions.

With respect to claim 16, element 833 in Chapman '207 is a sleeve which prevents over-tightening of the bolt 832. Column 17, lines 33-34. In contrast, the claimed clutch drive pins, e.g., element 99 in Fig. 20, operate with the cam surface on

the clutch lever, to act on the outer clutch plate 185. Accordingly, Chapman '207 does not disclose the claimed clutch drive pins.

Turning to claim 1, the Table below matches up the claim elements of claim 1, with their characterization from paragraph 5 of the 03/11/2005 Office Action, and with the actual disclosure from Chapman, U.S. Patent No. 6,517,207 and Lindsay, U.S. Patent No. 5,697,757.

Claim 1	Office Action Applying Chapman USP 6,517,207	Actual Disclosure in Chapman USP 6,517,207	Column	Line
A camera support comprising: a pan frame, including a pan housing, a pan arm, rotatably attached to the pan housing and a pan motor for moving the pan arm relative to the pan housing;	Fig. 4B, ref. 42, 124/140 and Figs. 22-24, ref. 804	42 post assy	5	41
		124 head frame;	6	67
		140 pan pivot joint	6	65
		804 motor	17	14
	Fig. 4, ref 124/140	124 head frame	6	67
		140 pan pivot joint	6	65
	Fig. 4B, ref 42	42 post assy	5	41
	Figs. 22-4, ref. 804	804 motor	17	14
a tilt frame	Fig. 2, refs. 44 [80/84/88], 46, and 60	44 boom arm	5	30
		80 rear segment	6	2
		84 second front segment	6	6
		88 wall sections	6	29
		46 center pivot joint	6	36
		60 track section	5	59
including tilt housing,	Fig. 4B, ref 46	46 pivot joint	5	51

a tilt arm rotatably attached to the tilt housing and	Fig. 2, refs. 44 [80/84/88],	44 boom arm 80 rear segment 84 second bout segment 88 wall sections	5 6 6 6	30 2 6 29
a tilt motor for moving the tilt arm relative to the tilt housing;	Figs. 22-34, ref. 804	804 motor	17	14
and with the tilt frame securable onto the pan arm at multiple positions along the pan arm;	Figs. 4B and 7, refs 220/222 Col. 5, lines 49-54; col. 12, lines 18-30	220 knob 222 stud section	7 7	64 63
a roll frame	Fig. 8, ref. 286	286 roll tube	12	38
having a roll housing	Fig. 8, 284/294	284 outer roll housing	12	41
and a camera platform rotatably attached to the roll housing;	Fig. 8, refs. 272, 276, and 278	272 camera platform	12	52
and a roll motor for moving the camera platform relative to the roll housing;	Figs. 22-24, ref. 804; col. 17, lines 1-10	804 motor	17	14
and with the roll frame securable to the tilt arm at multiple positions along the tilt arm;	Figs. 3B and 8, refs. 160/198/202/220; Col. 12, lines 31-44 and 50-63	160 counterweights 198 track axle 202 riser hub 220 knob	9 8 13 7	31 48 1 64
		Lindsay, USP 5,697,757		
Tilt frame	36	36 Horizontally moveable carriage	4	16
securable onto the pan arm	37/35	37 wheels 35 horizontally extending guideway	4 4	17 14
at multiple positions	Col. 4, lines 14-28			

Lindsay, U.S. Patent No. 5,697,757, discloses a telescoping camera crane unrelated to the presently claimed camera head. Element 36 in Lindsay is a horizontally moveable carriage having wheels 37 constrained to run in a guideway to support the carriage for horizontal movement. Column 4, lines 14-19. Element 35 is the horizontally extending guideway and not a pan arm. While the Examiner may be correct in that both Chapman and Lindsay have components for stabilizing or balancing a camera, neither reference relates to the claimed camera head.

As shown, neither reference discloses a tilt frame rotatably attached to a tilt housing, and with the tilt frame securable onto a pan arm at multiple positions. The same can be said for the roll frame elements. As described at 0010, the ability to secure the tilt or roll frames, as claimed, allows the camera head to be quickly and easily configured to carry a wide range of cameras or related equipment.

Applicant agrees with the Examiner's observation at page 6 of the Office Action that Chapman does not disclose a camera support with the tilt frame securable onto the pan arm at multiple positions along the pan arm. However, the combination of Lindsay and Chapman does not render claim 1 obvious, at least because the elements admittedly not suggested by Chapman are clearly also not suggested by Lindsay.

Regarding the rejection of claim 2, the hand knob 220 and stud section 222 shown in Fig. 7 of Chapman are elements of an anti-backlash joint. Column 4, lines 15-16. As shown in Figs. 3A and 6 of Chapman, these joints are purely pivot joints which adjust friction. There is no translational or sliding movement possible with the pivot joints 210 in Chapman. Similarly, the pivot joints 210 in Chapman do not relate to being able to secure a frame at multiple positions along an arm, as claimed.

Turning to claim 5, while Chapman discloses various bearings, there is no suggestion of a sealed bearing in Chapman, as claimed. Indeed, Chapman does not address sealing out water, for operation in wet environments, or underwater.

Turning to claim 7, Chapman does not suggest any type of sealed structure which could be subject to purging via gas purge ports. The lightening holes 90 in Chapman are provided to lighten the structure. Since they are permanently open, the structure necessarily cannot be purged via a gas source.

Regarding claim 8, the stud section 222 in Chapman operates to adjust tension via applying a clamping force. It operates gradually via screw threads. In contrast, claim 8 describes a pan lock pin moveable between a lock position, where the pin extends between the pan housing and the pan arm to prevent movement between them, to an unlocked position wherein the pin is withdrawn to allow rotational movement between the pan housing and the pan arm. There is no suggestion in Chapman of such pin movement. Moreover, even if element 222 in Chapman is characterized as a pan lock pin, although it may be loosened, it cannot be withdrawn to allow movement, or extended into, to prevent movement between a pan housing and pan arm.

Regarding the rejection of claim 10, Chapman does not suggest any pan shaft sealed against a pan housing. Element 125 in Fig. 4B, as referenced at the bottom of page 8 of the 03/11/2005 Office Action, is a bolt which simply attaches the base collar 122 onto the head frame 124. The bolt 125 is not a pan shaft, as claimed, as it does not rotate, and it is not associated with any motor, nor is it sealed against any housing.

Turning to the rejection of claim 19, as noted by the Examiner at the top of page 9, Chapman discloses an adjustable friction joint. Tightening the handle 220 increases friction. Applicant agrees with the Examiner's observation that Chapman does not

disclose a position locking device which can be used to adjust the size of the camera head.

With respect to the second paragraph on page 9 of the 03/11/2005 Office Action, in Lindsay, 36 is the trolley, column 4, line 24, and 35 is a guideway in the carrier 17. Column 4, lines 14-16. However, these elements operate to provide a balancing force on the entire crane arm. Column 4, lines 14-38. There is no suggestion in Lindsay (or in Chapman) whatsoever of a position locking device associated with adjusting the size of a camera head.

With respect to the rejection of claim 20, as set forth above in discussing claims 12 and 1, at a minimum, Chapman does not disclose first and second motors sealed within housings; or a second frame having an extension section slidable over or into a first arm; or a locking device which cooperates with the extension section, to adjust the size of the camera support. Lindsay also fails to suggest any of these elements. Consequently, claim 20 cannot be obvious over the combination of Chapman and Lindsay. In response to the comments at the top of page 12, while Lindsay discloses camera crane arm counterbalancing techniques, claim 20 is directed to other elements largely unrelated to balancing a crane arm.

Relative to the rejection of claim 4, Applicant agrees that Chapman 6,517,207 does not disclose waterproof cable segments. Indeed, the camera crane described in Chapman is entirely unrelated to underwater operation. Fantone discloses use of waterproof cable. However, Fantone is entirely unrelated to the field of camera cranes and camera heads which are used to achieve precise and repeatable camera positions and movement, as described in the application at 0001-0004.

Turning now to the rejection of claims 11 and 14, Chapman '207 does not disclose pan, tilt, or roll housings, or seals in the housing for underwater operation. The Teflon® rings 234 shown in Fig. 7 are used to provide the pivot joints 210 with adjustable tension or drag features. Column 7, lines 52 – col. 8, line 46. The Teflon® rings (and indeed the entire content of Chapman '207) is unrelated to a sealed design for underwater operation.

Sondergard, U.S. Patent No. 5,316,412, discloses a remote controlled underwater joint and crack sealing apparatus. A camera and light mount unit 66 having pan and tilt capabilities carries an underwater video camera 68 and an array of underwater lights 70. Column 2, lines 52-55. However, the combination of Chapman, Lindsay, and Sondergard does not disclose the claimed pan, tilt, and roll housings, or a camera head adapted for use underwater.

In view of the foregoing, it is submitted that the claims are in condition for allowance. A Notice of Allowance is therefore requested.

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